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others, and presents a shallow groove upon its convex surface at its base.

Fig. 1.



Fig. 2.



At the surface answering to posterior aspect of carpus of a normal foot (but here in front) are two symmetrical corneous embossements, which may be compared to "cleets." The position of the limb, with its palmar face directed forwards, may be due to erratic rotation of the parts in embryo. Dissection would be essential to determine this point.

On a New Genus of Camelidæ.—Prof. COPE remarked that the dental formula of *Procamelus* is $I. \frac{1}{3}$; $C. \frac{1}{1}$; $Pm. \frac{2}{4}$; $M. \frac{3}{3}$. The number of teeth of the superior series anterior to the true molars being left uncertain by Dr. Leidy, he, Prof. Cope, was able to complete our knowledge of it after an examination of Colorado specimens. He ascribed three superior incisors to this genus at that time, as they are possessed by the species which he named *Procamelus heterodontus*. Having obtained in New Mexico the nearly entire cranium of the *P. occidentalis*, he found that the single lateral incisor in the existing *Camelidæ* is the only one that can be properly assigned to this genus. In this specimen, it is true, a small alveolus on one side contains a small crown of a second incisor; but on the opposite side the corresponding one is shallow and empty. As the last molar is not fully protruded, it would appear that this incisor is a temporary tooth, being shed before the maturity of the animal. It thus differs from the existing camels only in the longer persistence of these transitory incisors. The

position of the first incisor in the specimen in question is marked by a roughness of the surface which indicates the still earlier shedding of a tooth, and filling up of the alveolus. In the *P. heterodontus*, of which the superior dentition of an adult was in his possession, the alveoli of the three superior incisors are large and deep, showing that the dental formula is, I. $\frac{3}{3}$; C. $\frac{1}{1}$; Pm. $\frac{4}{4}$; M. $\frac{4}{4}$. The alveoli are empty in the specimen, but this is doubtless due to their regular funnel shape, which gives little hold for the conic, though elongate fangs. This animal, then, represents a genus distinct from *Procamelus*, defined by the dental formula just given, for which he proposed the name of *Protolabis*. The typical and only known species is *Protolabis heterodontus*, Cope, from the Loup Fork beds of Northeast Colorado.

A new species of *Procamelus* was described under the name of

Procamelus fissidens, Cope? *P. occidentalis*, "Leidy."

Cope, Annual Report U. S. Geol. Survey Territories, 1873, p. 531.

This species is distinguished by the shortening of the series of true molar teeth as compared with the premolars, for while the second, third, and fourth premolars are similar in dimensions to those of the *P. occidentalis*, the true molars are considerably smaller. The crowns of the latter are stout, and not narrowed nor furnished with an antero-external ridge as in *P. angustidens*, and the anterior external crescent projects free posteriorly an oblique angular rib on the external face of the crown, being separated from the second crescent by a deep fissure. The last inferior molar is not very elongate, and the fifth lobe a crescentic section, *i. e.*, is concave on the external face, as in the *P. angustidens*.

The inferior border of the ramus is straight from the first true molar posteriorly. The anterior face of the coronoid process is oblique outwards. The edge of the masseteric insertion forms a low ridge concentric with the convex posterior border of the jaw; like the inner face of the same portion of the jaw, the surface is flat.

Measurements.

	M.	
	<i>P. fissidens.</i>	<i>P. occidentalis.</i>
Length of entire molar series . . . . .	.112	.126
Length of premolars . . . . .	.0385	.042
" second true molar . . . . .	.023	.0275
Width of " " . . . . .	.015	.0165
Length of third " . . . . .	.033	.036
Width of " " . . . . .	.014	.014
Depth of ramus at first true molar . . . . .	.035	
" at middle of last molar . . . . .	.040	.051
" at apex of coronoid process . . . . .	.140	
" at condyle . . . . .	.108	.118
" at post condylar angle . . . . .	.069	.085

One ramus nearly entire, and the molars of the other (excepting the last) were obtained near the Pawnee Buttes of N. E. Colorado.

The evolution of the existing types of Camelidæ is a good illustration of the operation of the laws of acceleration and retardation. In evidence of this we may follow the growth of the foot, and dentition of the most specialized, and therefore the terminal genus of the series, the American *Auchenia*. It is well known that the animals of this genus, in common with other ruminants, have the constituent metapodials of the cannon bone distinct during a longer or shorter portion of foetal life. As these elements are permanently distinct in the oldest or Miocene genus *Poebrotherium*, it is evident that acceleration of the process of ossification has caused their union at successively early periods in the genera of later ages. This is indicated by the long duration of their separation in the Loup Fork genus *Procamelus*. It is also well known since the time of Goodsir, that the embryos of ruminants exhibit a series of superior incisor teeth, which disappear early. It is probable, but not certain, that in the Miocene genus *Poebrotherium*, as in various contemporary selenodont *Artiodactyla*, that the superior incisors persisted. He had, however, discovered that these teeth persisted in the Loup Fork genus *Protolabis* during adult life. He had also found that one, the second of these teeth in *Procamelus occidentalis*, persisted without being protruded from the alveolus until nearly adult age. In genera (*e. g.*, the bunodont *Artiodactyla*) where the incisors are normally developed, they appear at about the same time with the other teeth, and continue to develop to functional completeness. This development is retarded in *Protolabis*, since they are not so matured as to remain fixed throughout life in their alveoli. In *Procamelus* the retardation is still greater, since the first incisor reaches very small dimensions, and is, with its alveolus, early removed, while the second incisor only grows large enough and for a sufficient time to occupy a shallow alveolus, without extending beyond it. In the first incisor the process of retardation has reached its necessary termination, *i. e.*, atrophy¹ or extinction; while in the existing *Camelidæ* the second incisor also has disappeared in the same way. In ruminants other than *Camelidæ*, the third or external incisor has undergone the same process; while, in the *Bovidæ*, the canines also have been retarded in development, down to atrophy.

In the genus *Auchenia*, as has been pointed out, the premolar teeth are two in number; in *Poebrotherium* of the lower Miocene, they number four, the first and second of the normal mammalian series being present. The first premolar is present in *Poebrotherium*, *Protolabis*, *Procamelus*, *Pliauchenia*, and *Camelus*; it is

¹ See Proceedings Academy, Philadelphia, 1876, p. 17, for an explanation of these terms.

wanting in *Auchenia* and other *Ruminantia*. In the latter it is present in the foetus, but soon disappears; in *Auchenia*, according to Owen, it is retained for a somewhat longer time.¹ Thus retardation of the growth of this tooth is first seen in the latter genus so far as known, and is more pronounced in the other *Ruminantia*. The second premolar is present in *Poëbrotherium*, *Protolabis*, and *Procamelus*; it is absent in *Pliauchenia*, *Camelus*, and *Auchenia*. In the last two genera it is a transitional character of immaturity, and we may infer that this is also the case with *Pliauchenia*. It is thus evident that retardation in the supply of nutritive material to this tooth has caused its reduced size, and terminated the duration of its existence. This has not occurred in the other lines of *Ruminantia*, where it remains as in *Poëbrotherium*. From these and many analogous cases, the general law may be deduced, that *identical modifications of structure, constituting evolution of types, have supervened on distinct lines of descent.*

E. O. Thompson and A. E. Foote, M.D., were elected members.

Dom Pedro II., Emperor of Brazil; Capt. Luiz de Saldanha da Gama, of the Brazilian Navy, and Dr. José de Saldanha da Gama, of Rio Janeiro, Brazil, were elected correspondents.

The following paper was ordered to be published:—

¹ Odontography, p. 530.